COURSE: FISH NUTRITION AND FISH FOOD TECHNOLOGY FIS 409

LECTURER: Dr. S.O. Obasa

UNITS: 3

1. Feed formulation
   i.   Definition. Calculation of different ingredients to be mixed together to form a balance ration.

   ii. Requirements of feed formulation.

   iii. Different methods of feed formulation.
        Pearson's square
        Least cost and
        Algebraic.

Example 1.

Using the Pearson's square method, formulate a ration (100 kg) containing 30% crude protein (CP), using fish meal (72% CP) and maize, (10%CP). Calculate each ingredient contribution by weight and by protein.

$$72 \qquad\qquad 20$$
$$\frac{\quad}{62} \times 100 = 32.26$$

$$30$$

$$10 \qquad\qquad 42$$
$$\frac{\quad}{62} \times 100 = 67.74$$
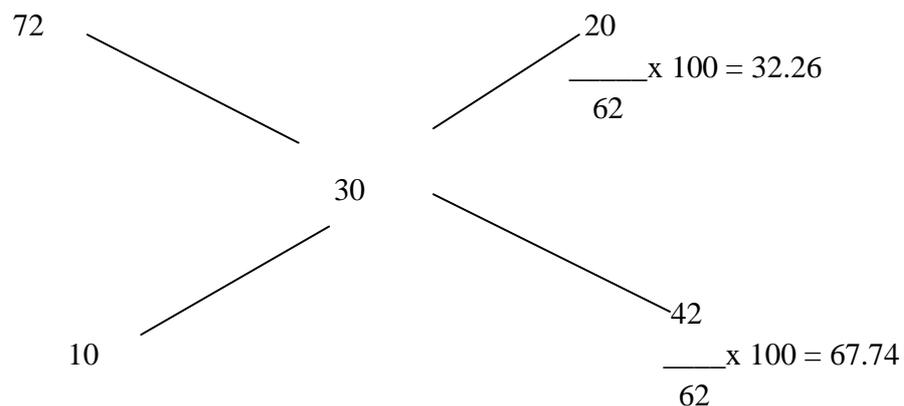
Contribution of fish meal by weight = 32.26
Contribution of maize by weight   = 67.74
                                   _____

Total   = 100.0
     "   " fish meal by protein =   32.26/100 x 72 = 23.23
     "   " maize   " "   =   67.72/100 x10 = 6.77
                                                    ‾‾‾‾
                                              Total   = 30.00 %

Example 2
Formulate a ration containing 30% CP using fish meal (72%CP), soybean meal (43%CP)
in the ratio 1:2. Use maize (10%CP) as energy source..
(Ratios are assigned when using more than one source of nutrient).

Fish meal 72% CP   Ratio 1   1x72 = 72
Soybean meal 43%CP Ratio 2   2 x 43 = 86
                         ‾‾‾   ‾‾‾‾
                          3   158/3 = 52.67

52.67   20/42.67 x100 = 46.87

              30

  10   22.67/42.67 x100 = 53.13
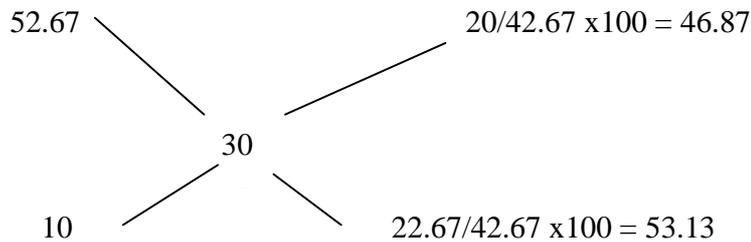
Protein sources contribution by weight = 46.87
Individual source = 46.87/3 = 15.62
Fish meal = 15.62 x 1 = 15.67
Soybean meal = 15.62 x2 = 31.24
 Maize = 53.13
Contribution by protein:
Fish meal = 15.62/100x72 = 11.25
Soybean meal = 31.24x43 = 13.43
Maize   = 53.13/100 x 10 = 5.31
Total =
                         ‾‾‾‾
                   29.99 or 30.00%.

3. Different methods of feeding.

1. Point/spot feeding.

This is when feed is dispensed to fish at a point or spot in the culture system.

Advantages and disadvantages

2, Broadcast feeding.

This is when feed is dispensed to fish by spreading or broadcasting in the culture system.

Advantages and disadvantages.

2. Mechanical feeding

Feeding equipments

Stationary feeding equipment e. g. Demand feeder

Mobile feeding equipment e. g. Automatic feeder.

Mode of feeding

1. Feeding at percentage body weight.

2. Feeding to satiation.